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TECHNICAL FIELD

[Field of the Invention] This invention relates to the recording device which can be prevented from reproducing CM part in the recorded program and the record approach, a regenerative apparatus, the playback approach, and the CM detection approach.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Therefore, from the former, this CM image was automatically detected at the time of playback, and some approaches of canceling were proposed at it. For example, the information which identifies the monophonic recording / stereo / voice multiplex in a sound signal was used as information which performs CM detection. That is, CM detection is performed by this editing and CM using these signals changing. However, by this conventional approach, by this editing and CM, when the format of a sound signal was the same, there was a trouble that CM detection could not be performed.
[0004] As an example, when televising of a film is considered, CM and a Japanese film are broadcast by the stereo phonological form in many cases. On the other hand, oil painting is broadcast by the voice multiplex format or the stereo phonological form with a title in many cases. CM inserted into the oil painting of a voice multiplex format is detectable by the above-mentioned approach. However, since this editing and CM were stereo phonological forms, both CM inserted into the Japanese film and CM inserted in the oil painting of a stereo phonological form with a title had the trouble that CM part was undetectable.
[0005] Therefore, the object of this invention has CM detectability ability in offering a higher recording device and the higher record approach, a regenerative apparatus, the playback approach, and the CM detection approach.

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MEANS

[Means for Solving the Problem] In the recording device which can be prevented from reproducing CM part in the recorded program in order that this invention may solve the technical problem mentioned above A telecine detection means to detect the part by which telecine conversion of the supplied video signal was carried out, It is the recording device characterized by having a CM detection means to detect CM part based on the detection result by the telecine detection means, and a CM detection information record means to record CM detection information detected by CM detection means on a record medium.

[0007] Moreover, this invention is set to the regenerative apparatus which reproduces the image sound signal recorded on the record medium. CM detection information read-out means which reads CM detection information which it is as a result of detection that CM part in an image sound signal was detected based on the detection result of a playback means to reproduce an image sound signal, and the telecine conversion image in a video signal, from the record medium from a record medium, It is the regenerative apparatus characterized by having the control means which controls a playback means to fly CM part in an image sound signal, and to reproduce based on CM detection information by which reading appearance was carried out with CM detection information read-out means.

[0008] Moreover, this invention is set to the record approach which can be prevented from reproducing CM part in the recorded program. The step of the telecine detection which detects the part by which telecine conversion of the supplied video signal was carried out, It is the record approach characterized by having the step of CM detection which detects CM part based on the detection result by the step of telecine detection, and the step of CM detection information record which records CM detection information detected by the step of CM detection on a record medium.

[0009] Moreover, this invention is set to the playback approach which reproduces the image sound signal recorded on the record medium. The step of CM detection information read-out which reads CM detection information which it is as a result of detection that CM part in an image sound signal was detected based on the detection result of the step of the playback which reproduces an image sound signal, and the telecine conversion image in a video signal from the record medium from a record medium, It is the playback approach characterized by having the step of the control which controls a reproductive step to fly CM part in the image sound signal reproduced by the step of CM detection information read-out from the record medium based on CM detection information by which reading appearance was carried out, and to reproduce.

[0010] Moreover, it is the CM detection approach characterized by for this invention to have the step of the telecine detection which detects the part by which the telecine conversion of [in a video signal] was carried out in the CM detection approach of detecting the CM part in an image sound signal, the step of the CM detection which detects a CM part based on the detection result by the step of telecine detection, and the step of the CM detection information record which records the CM detection information detected by the step of CM detection on a record medium.

[0011] As mentioned above, since the part by which telecine conversion of the supplied video signal was carried out is detected and CM part is detected based on this detection result, by the recording device and approach by this invention, the point that a commercial image and film images, such as a film, change is detectable.

[0012] Moreover, by the regenerative apparatus and approach by this invention, since CM part is flown and he is trying to reproduce based on CM detection information based on the detection result recorded on the record medium of having detected the telecine conversion image of a video signal, CM part inserted in the film image can be canceled, and it can reproduce.

[0013] Moreover, by the CM detection approach by this invention, since the part by which telecine conversion of [in a video signal] was carried out is detected and CM part is detected based on this detection result, the point that a commercial image and film images, such as a film, change is detectable.

[0014]

[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained. This 1 operation gestalt performs by both the detection result based on the difference in a sound signal format with the volume conventional CM and on program book for detection of CM image, and the detection result of the telecine conversion performed in case the film image of 24 coma / second is changed into the video signal for the television broadcasting of 60 fields / second. Thereby, improvement in CM detectability ability in case this editing is a film image is achieved.

[0015] First, in order to make an understanding easy, drawing 1 is used and telecine conversion is explained. Film images, such as a film, consist of the image of 24 coma in 1 second. On the other hand, a television image consists of the image of the 60 fields in 1 second. Therefore, in order to enable it to display the image based on a film image as a television image, the image number of sheets per second of a film image must be changed into 60 sheets from 24 sheets. Such conversion is called telecine conversion (or 3:2 pulldown).

[0016] From the image A1 which is one coma of a film image, the ODD field B1 and EVEN field B-2 of a television image are made, and it is displayed in order from it. From the image A2 which is the one next coma of a film image, the ODD field B3 and EVEN field B4 of a television image are made similarly, and it is displayed in order from it. And the field B3 is repeatedly used as next ODD field B5 of a television image.

[0017] From image A3 of a film image which is the one following coma further, EVEN field B6 and the ODD field B7 of a television image are made, and it is displayed in order from it. And from image A4 which is the one next coma of a film image, while the EVEN field B8 and the ODD field B9 of a television image are made, the EVEN field B8 is repeatedly used as the next EVEN field B10, and these are displayed in order.

[0018] Henceforth, an above-mentioned pattern is repeated. By telecine conversion, the piece field is repeated by five frames at 2 times of a rate in this way. Thereby, the 5 fields of a television image are made from two coma of a film image, and the film image of 24 coma / second is changed into the television image of 60 fields / second.

[0019] Drawing 2 shows an example of the configuration of the record regenerative apparatus by one gestalt of this operation. It is received by the antenna 1 and a television broadcasting electric wave is supplied to a tuner 2. In a tuner 2, the television broadcasting electric wave received with an antenna 1 is tuned in, and the received electric wave is detected and amplified. The output of a tuner 2 is supplied to the video-signal processing block 5 and the sound signal processing block 9 through a switching circuit 4.

[0020] In addition, a signal can also be supplied to the video-signal processing block 5 and the sound signal processing block 9 from the external input terminal 3 by changing a switching circuit 4. An external input is not limited to this example, for example, separates a video signal and a sound signal beforehand, and you may make it input them into A/D converters 6 and 10 mentioned later, respectively.

[0021] It is AGC (Auto Gain Control) to the signal which the video signal was taken out from the supplied signal in the video-signal processing block 5, and was taken out. Processing, processing about brightness/chrominance signal, etc. are performed. The video signal outputted from the video-signal

processing block 5 is supplied to CM detection block 13 while it is changed into digital image data with A/D converter 6 and is supplied to the video-signal compressed block 7.
[0022] The image data supplied to the video-signal compressed block 7 are a predetermined method (Discrete Cosine Transform), for example, DCT. Compression coding is carried out by MPEG(Moving Picture Experts Group) 2 method which is a compression coding method using predicting coding by the motion vector. The image data by which compression coding was carried out are saved up by memory 8. Memory 8 is the buffer memory at the time of recording on a record medium.
[0023] On the other hand, in the sound signal processing block 9, a sound signal is taken out from the supplied signal and A/D converter 10 is supplied. Moreover, in the sound signal processing block 9, it is judged based on the pilot signal on which the supplied signal is overlapped whether the sound signal is which format of a monophonic recording / stereo / voice multiplex. This decision result is supplied to CM detection block 13 as sound signal information.
[0024] The sound signal outputted from the sound signal processing block 9 is changed into digital voice data with A/D converter 10. The voice data outputted from A/D converter 10 is supplied to CM detection block 13 while it is supplied to the sound signal compressed block 11.
[0025] Corresponding to a predetermined method, for example, the compression coding method of image data, the voice data supplied to the sound signal compressed block 11 is an MPEG audio method, with compression coding is carried out. The voice data by which compression coding was carried out is saved up by memory 12. Memory 12 is the buffer memory at the time of recording on a record medium.
[0026] By the way, this whole record regenerative apparatus is controlled by the microcomputer (it is hereafter called a microcomputer for short) 17. A microcomputer 17 consists of a CPU, RAM as ROM the program etc. was beforehand remembered to be, and work-piece memory, etc. moreover -- a control unit 16 -- playback / record / halt / rapid-traverse/-- various kinds of keys for already operating this record regenerative apparatus called return are prepared. Furthermore, the key for controlling CM cut mode is also prepared in a control unit 16. The signal corresponding to various keys is supplied to a microcomputer 17 from a control unit 16. Based on this signal, the directions which correspond to each part of this record regenerative apparatus are taken out with a microcomputer 17.
[0027] Writing/read-out of the above-mentioned memory 8 and 12 and the memory 21 and 26 mentioned later are made based on the control of the memory controller 18 based on the directions from a microcomputer 17. reading appearance of the memory controller 18 is carried out to each memory, and it issues directions of the address in the case of /writing, timing, etc.
[0028] Moreover, a microcomputer 17 is issuing directions to a disk controller 19, controls the servo system which is not illustrated and controls the writing/read-out in the record playback block 15 mentioned later.
[0029] Reading appearance of the image data and voice data which were saved up by memory 8 and 12, respectively is carried out to predetermined timing by the control of the memory controller 18 based on directions of a microcomputer 17, and they are supplied to the modulation block 14 for record through a bus 50. In the modulation block 14 for record, error correction coding is performed to the supplied signal. And it changes into the signal which performed the EFM (Eight to Fourteen Modulation) modulation, and was suitable for record as opposed to the signal by which error correction coding was carried out. The changed record signal is supplied to the record playback block 15.
[0030] A record signal is the record playback block 15, and is written in and recorded by the control of a disk controller 19 based on directions of a microcomputer 17 to the disk-like record medium (it is hereafter called a disk for short) 40 which consists of a magneto-optic disk. Record is made based on the positional information currently beforehand recorded on the disk 40, for example, a time code.
[0031] On the other hand, in CM detection block 13, CM part is detected based on the sound signal information, image data, and voice data which were supplied. A detection result is outputted as CM detection result information, and is supplied to the record playback block 15 through a bus 50 and the modulation block 14 for record. (And a predetermined field [in / as a time code / for example, / in the record positional information of CM part / a disk 40] (Table Of Contents), for example, TOC, It is written in the field appointed as a field.)

[0032] The data recorded on the disk 40 are reproduced by the control of a disk controller 19 based on directions of a microcomputer 17. The regenerative signal reproduced from the disk 40 is supplied to the recovery block 20 for playback from the record playback block 14. In the recovery block 20 for playback, an EFM recovery is given to a regenerative signal in the recovery processing corresponding to the modulation technique at the time of record, and this example. And the error correction sign given at the time of record is decrypted, an error correction is made, and it is outputted as image data and voice data. Image data and voice data are saved up by memory 21 and memory 26 through a bus 50, respectively.

[0033] The image data by which reading appearance was carried out from memory 21 are supplied to the video-signal expanding block 22. And compression coding (this example MPEG 2 method) performed at the time of record is solved. The image data which had compression coding solved are changed into the video signal of analog format with D/A converter 23, and are supplied to the video-signal processing block 24. In the video-signal processing block 24, predetermined processings, such as emphasis processing, are performed to the supplied video signal. A video signal is outputted from the video-signal processing block 24 as a composite signal, and it projects it as a playback image with a monitor 25.

[0034] compression coding (this example MPEG audio) to which voice data by which reading appearance was carried out from memory 26 was given with the sound signal expanding block 27 on the other hand at the time of record -- a solution -- it is changed into the sound signal of analog format with him and D/A converter 28, and the sound signal processing block 29 is supplied. And with the sound signal processing block 29, tone control, magnification, etc. are processed and a loudspeaker 30 is reproduced.

[0035] In advance of playback of the above-mentioned image from a disk 40, and a sound signal, the TOC information recorded on the TOC field of a disk 40 is reproduced. Reproduced TOC information is carried out in processing which the recovery block 20 for playback was supplied and was mentioned above, and is outputted as CM detection result information. CM detection result information is supplied to a microcomputer 17 through a bus 50, and is memorized by the memory in a microcomputer 17.

[0036] At the time of playback of an image and voice, CM cut can be performed by performing actuation predetermined by the control unit 16 based on CM detection result information. That is, the time code corresponding to CM part is obtained using CM detection result information reproduced from the TOC field of a disk 40. Based on the time code obtained from this CM detection result information, directions are taken out with a microcomputer 17 to the memory controller 18, and read-out control of memory 21 and 26 is performed so that CM part may be skipped.

[0037] Drawing 3 shows the configuration of CM detection block 13 more to a detail. The image data outputted from A/D converter 6 are supplied to the telecine detector 32 and the scene change detector 33, respectively while a part for two or more fields is saved up by memory 31. Moreover, the image data by which reading appearance was carried out from memory 31 are detected by the telecine detector 32 and the scene change detector 33, respectively.

[0038] This CM detection block 13 compares the image data directly supplied from A/D converter 6, and the image data by which reading appearance was carried out by being delayed from memory 31 by the 2 fields in the telecine detector 32. And it investigates whether the image data of the these 2 field are in agreement. Furthermore, coincidence of the these 2 field investigates whether it has generated regularly every 5 fields.

[0039] As already explained using drawing 1 , with the image to which telecine conversion was carried out, like the field B3 shown, for example in drawing 1 and B5, and the fields B8 and B10, the same field image sets the 1 field repeatedly, and is inserted, and this is repeated further every 5 fields. Then, it becomes possible by detecting this pattern to detect the image data with which telecine conversion was performed. If the image data by which telecine conversion was carried out are detected by the telecine converter 32, a telecine detection flag will be supplied from the telecine detector 32 to the CM detector 35.

[0040] The point of image data changing [scene] is detected in the scene change detector 33. For example, it is delayed from memory 31 by the 1 field, and it is compared by the ** scene change detector 33 with the image data directly supplied from A/D converter 6 that reading appearance was carried out. And when both histogram is compared and there is a difference more than predetermined, it is judged that there was a scene change between these 2 fields. A scene change detection result is supplied to the CM detector 35.

[0041] On the other hand, the voice data outputted from A/D converter 10 is supplied to the silent detector 34. The silent section in voice data is detected in the silent detector 34. For example, detection of the silent section is made by taking the envelope of voice data. A detection result is supplied to the CM detector 35. Moreover, the sound signal information outputted from the sound signal processing block 9 is supplied to the CM detector 35.

[0042] In the CM detector 35, CM section is detected based on such supplied information, i.e., a telecine detection flag, a scene change detection result, silent section information, and sound signal information. CM section is obtained as a time code of for example, CM start point and the point ending [CM], and is once memorized by the memory 36 for detection results. Reading appearance of the CM section information saved up by memory 36 is carried out to predetermined timing, it is supplied to the record playback block 15 through a bus 50 and the modulation block 14 for record, and is written in the TOC field of a disk 40. In addition, a microcomputer 17 can perform processing by the CM detector 35.

[0043] Drawing 4 and drawing 5 show CM detection actuation with the above-mentioned CM detector 35 further to a detail. In addition, CM detection based on sound signal information which shows any a monophonic recording / stereo / voice multiplex the sound signals currently performed from the former are explains the case where both impossible these editing (film image) and CMs are stereo voice below.

[0044] Drawing 4 shows processing of an example in the case of detecting the start point of CM. Drawing 4 A shows a time change of the content of a program, and having changed from this editing to CM at Point A is shown. This point A, i.e., the detection result which is a point changing [scene] and shows that there was a scene change from the scene change detector 33, is outputted. Moreover, a short time and the silent section occur at this point A. The silent section is detected by the silent detector 34 and a detection result is outputted.

[0045] Drawing 4 B shows the field of image data, an upside is the odd number (ODD) field, and the bottom is the even number (EVEN) field. One frame consists of the 2 fields which consist of the OD field and the EVEN field. In the case of a film image, a figure shows discernment of a coma, and, in the case of a television image, discernment of a frame is shown. Since this editing is a film image, telecine conversion is carried out, it is broadcast and the 2 fields repeated by being exist the 1 field like Fields H and I and Fields J and K. And this pattern is repeated at intervals of 5 fields.

[0046] The image data directly supplied from A/D converter 6 with the telecine detector 32 are compared with the image data by which reading appearance was carried out by being delayed from memory 31 by the 2 fields, and detection of the image repeated by being the 1 field is performed.

[0047] This detection is detected by whether the field which is the 1 field and is mutually in agreement about each of every piece field, ODD, and the EVEN field exists. For example, the 2 fields where the absolute value of the difference of the 2 continuous fields serves as min about the image of the piece field by which reading appearance was carried out from memory 31 are chosen as the 2 fields which are mutually in agreement. This processing is performed about ODD and the EVEN field, respectively. In addition, the absolute value of the difference of the 2 field is obtained by the thing which correspond between 2 fields and for which the absolute value of difference is taken for every pixel, and the total as the field of the value is taken.

[0048] Thus, detection of coincidence of the field sets a field coincidence flag in the next field where coincidence was detected (drawing 4 C). It detects further whether this field coincidence flag is set every 5 fields. It changes the telecine detection flag with which it is shown in drawing 4 D in the section detected that the field coincidence detection flag is stood every 5 fields into the 'H' condition.

[0049] In addition to a telecine detection flag, in the CM detector 35, CM start point is judged based on the scene change detection result in the scene change detector 33, and the silent detection result in the silent detector 34. At this time, a field coincidence flag is set in the next field of the field where the field coincidence by telecine conversion was detected. Therefore, at least, unless it sees 5 field point to a pan, it cannot know whether it is what the field where the field coincidence flag was set depends on telecine conversion. At drawing 4 , it turns out at the event of Point M that Point L is the termination of the pattern by telecine conversion. Let time amount from Point M to Point L be a detection time delay. So, in the CM detector 35, the point L which is a point which is near [at the time of only this detection time delay going back from the time of day of Point M], for example changing [scene], and is the silent section is judged to be CM start point.

[0050] Drawing 5 shows processing of an example in the case of detecting the point ending [CM]. Drawing 5 A shows a time change of the content of a program, and having changed from CM to this editing by point A' is shown. This point A', i.e., the detection result which is a point changing [scene] and shows that there was a scene change from the scene change detector 33, is outputted. Moreover, a short time and the silent section occur in this point A'. The silent section is detected by the silent detector 34 and a detection result is outputted. In addition, the semantics of drawing 5 A, the drawing 5 section B, drawing 5 C, and each drawing 5 D supports respectively drawing 4 A, drawing 4 B, above-mentioned drawing 4 C, and above-mentioned drawing 4 D.

[0051] Telecine conversion is not performed with CM image. Therefore, one frame is completed with the image for the 2 field, and the field coincidence whose two field images correspond ranging over a frame does not occur. Therefore, both the field coincidence flag and the telecine detection flag are set to 'L'. However, if it changes from CM to this editing by point A', since this editing is a film image, telecine conversion will be performed, and the field by which 1 field ************ is carried out will occur every 5 fields like Fields N and O and Fields P and Q.

[0052] With the telecine detector 32, the fields N and O by which 1 field ************ is carried out are detected, and a field coincidence flag is set like drawing 5 C. And for example, the same coincidence (fields P and Q) as a degree is detected, a field coincidence flag is set, and if the field coincidence for every 5 field was decided, the telecine detection flag which was 'L' will be set to 'H' by the inside of CM (the point S of drawing 5 D).

[0053] In addition to a telecine detection flag, in the CM detector 35, CM start point is judged based on the scene change detection result in the scene change detector 33, and the silent detection result in the silent detector 34. Also in this case, like the time of the decision of above-mentioned CM start point, an appearing [a field coincidence flag]-every 5 field pattern is seen, a telecine detection flag is set to 'H', it accumulates, and a detection time delay occurs. So, in the CM detector 35, the point R which is a point which is near [at the time of only this detection time delay going back from the time of day of Point S], for example changing [scene], and is the silent section is judged to be a point ending [CM].

[0054] The detection time delay at the time of determining CM start point or an ending point can be suitably set up according to the detection precision demanded. In the above-mentioned example, in the telecine detector 32, when field coincidence is not detected at the planned point, the telecine detection flag is promptly dropped on detection of CM start point from 'H' to 'L'. Similarly, when the field coincidence for every 5 field is detected, the telecine detection flag is promptly raised from 'L' in detection of the point ending [CM] to 'H'.

[0055] On the other hand, when the regularity of the field coincidence for every 5 fields is confused by edit after telecine conversion in a actual image, or when incorrect-detecting the part which the still picture is following with the field coincidence by telecine conversion, the factor of various incorrect detection may arise. What is necessary is just to lengthen more the judgment period of CM start point or an ending point, in order to correspond to such incorrect detection. With it, the detection time delay which should be amended is lengthened corresponding to the part which lengthened the judgment period.

[0056] In addition, in the CM detector 35, the voice of this editing is a monophonic recording or voice multiplex, and when CM is a stereo, CM detection is performed based on the sound signal information supplied from the sound signal processing block 9. Since this is the same approach as the conventional method, with is made, detailed explanation here is omitted.

[0057] Drawing 6 shows the example of CM detection result information acquired with the CM detector

35. Thus, detected CM start time which a number is attached in order for every CM, and corresponds, and CM end time are acquired as a time code. a time code -- this -- an example -- **** -- a disk -- 40 -- a top -- a location -- corresponding -- having -- the time -- (-- h --) -- /-- a part -- (-- m --) -- /-- a second -- (-- s --) -- /-- a frame -- (-- f --) -- expressing -- having .

[0058] In addition, as mentioned above, the writing of the data to a disk 40 is controlled by the microcomputer 17, and the microcomputer 17 always grasps on which location on a disk 40 a record signal is recorded. For example, a microcomputer 17 and a disk controller 19 write record data in a predetermined location, reading the positional information beforehand recorded on the disk 40 by the reader style which is not illustrated. Although CM detection result information is not illustrated, it is matched with the record location of the associated data to a disk 40 top by control of a microcomputer 17 and the memory controller 18, and is memorized by it by the memory 36 for detection results.

[0059] Drawing 7 shows an example of the format in the case of the record over the disk 40 of CM detection result information shown in drawing 6 . The field 41 where the index information on the content recorded on the disk 40 is recorded on the most-inner-circumference side of a disk 40 as shown in drawing 7 A is formed, and this field 41 is TOC (Table Of Contents). It is called a field 41. After the header which shows for example, CM detection result information, CM number, CM start time, and CM end time are repeated, and CM detection result is recorded on this TOC field 41.

[0060] A record format of CM detection result information shown in this drawing 7 is an example, and is not limited to this. Moreover, CM detection result information can be recorded on other fields instead of the TOC field 41. In addition, although not illustrated, this editing and the image data of CM are recorded from the outside of the TOC field 41.

[0061] At the time of playback, a disk 40 is set to the record playback block 15, and reading appearance of the content recorded on the TOC field 41 is carried out first. And if CM cut is specified based on predetermined actuation of a control unit 16, based on CM start time and CM end time which were described to CM detection result information in the TOC field 41, read-out of memory 21 and 26 will be controlled by the memory controller 18, and CM section will be cut.

[0062] CM cut can be performed not only at the time of playback but at the time of record.

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PRIOR ART

[Description of the Prior Art] In case the program by television broadcasting etc. is recorded on videotape with a video tape recorder for home use, the commercial (CM is called hereafter) image which is inserted into a program and broadcast is also usually recorded on a record medium with the program image of this editing. Therefore, at the time of playback, it is reproduced in the content edited by the program book, and the form where CM image which does not have direct relation was inserted into the program. There were not few users who sense that it is troublesome to see CM image one by one during playback of a record image.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the recording device which can be prevented from reproducing CM part in the recorded program and the record approach, a regenerative apparatus, the playback approach, and the CM detection approach.
[0002]
[Description of the Prior Art] In case the program by television broadcasting etc. is recorded on videotape with a video tape recorder for home use, the commercial (CM is called hereafter) image which is inserted into a program and broadcast is also usually recorded on a record medium with the program image of this editing. Therefore, at the time of playback, it is reproduced in the content edited by the program book, and the form where CM image which does not have direct relation was inserted into the program. There were not few users who sense that it is troublesome to see CM image one by one during playback of a record image.
[0003]
[Problem(s) to be Solved by the Invention] Therefore, from the former, this CM image was automatically detected at the time of playback, and some approaches of canceling were proposed at it. For example, the information which identifies the monophonic recording / stereo / voice multiplex in a sound signal was used as information which performs CM detection. That is, CM detection is performed by this editing and CM using these signals changing. However, by this conventional approach, by this editing and CM, when the format of a sound signal was the same, there was a trouble that CM detection could not be performed.
[0004] As an example, when televising of a film is considered, CM and a Japanese film are broadcast by the stereo phonological form in many cases. On the other hand, oil painting is broadcast by the voice multiplex format or the stereo phonological form with a title in many cases. CM inserted into the oil painting of a voice multiplex format is detectable by the above-mentioned approach. However, since this editing and CM were stereo phonological forms, both CM inserted into the Japanese film and CM inserted in the oil painting of a stereo phonological form with a title had the trouble that CM part was undetectable.
[0005] Therefore, the object of this invention has CM detectability ability in offering a higher recording device and the higher record approach, a regenerative apparatus, the playback approach, and the CM detection approach.
[0006]
[Means for Solving the Problem] In the recording device which can be prevented from reproducing CM part in the recorded program in order that this invention may solve the technical problem mentioned above A telecine detection means to detect the part by which telecine conversion of the supplied video signal was carried out, It is the recording device characterized by having a CM detection means to detect CM part based on the detection result by the telecine detection means, and a CM detection information record means to record CM detection information detected by CM detection means on a record medium.

[0007] Moreover, this invention is set to the regenerative apparatus which reproduces the image sound signal recorded on the record medium. CM detection information read-out means which reads CM detection information which it is as a result of detection that CM part in an image sound signal was detected based on the detection result of a playback means to reproduce an image sound signal, and the telecine conversion image in a video signal, from the record medium from a record medium, It is the regenerative apparatus characterized by having the control means which controls a playback means to fly CM part in an image sound signal, and to reproduce based on CM detection information by which reading appearance was carried out with CM detection information read-out means.
[0008] Moreover, this invention is set to the record approach which can be prevented from reproducing CM part in the recorded program. The step of the telecine detection which detects the part by which telecine conversion of the supplied video signal was carried out, It is the record approach characterized by having the step of CM detection which detects CM part based on the detection result by the step of telecine detection, and the step of CM detection information record which records CM detection information detected by the step of CM detection on a record medium.
[0009] Moreover, this invention is set to the playback approach which reproduces the image sound signal recorded on the record medium. The step of CM detection information read-out which reads CM detection information which it is as a result of detection that CM part in an image sound signal was detected based on the detection result of the step of the playback which reproduces an image sound signal, and the telecine conversion image in a video signal from the record medium from a record medium, It is the playback approach characterized by having the step of the control which controls a reproductive step to fly CM part in the image sound signal reproduced by the step of CM detection information read-out from the record medium based on CM detection information by which reading appearance was carried out, and to reproduce.
[0010] Moreover, it is the CM detection approach characterized by for this invention to have the step of the telecine detection which detects the part by which the telecine conversion of [in a video signal] was carried out in the CM detection approach of detecting the CM part in an image sound signal, the step of the CM detection which detects a CM part based on the detection result by the step of telecine detection, and the step of the CM detection information record which records the CM detection information detected by the step of CM detection on a record medium.
[0011] As mentioned above, since the part by which telecine conversion of the supplied video signal was carried out is detected and CM part is detected based on this detection result, by the recording device and approach by this invention, the point that a commercial image and film images, such as a film, change is detectable.
[0012] Moreover, by the regenerative apparatus and approach by this invention, since CM part is flown and he is trying to reproduce based on CM detection information based on the detection result recorded on the record medium of having detected the telecine conversion image of a video signal, CM part inserted in the film image can be canceled, and it can reproduce.
[0013] Moreover, by the CM detection approach by this invention, since the part by which telecine conversion of [in a video signal] was carried out is detected and CM part is detected based on this detection result, the point that a commercial image and film images, such as a film, change is detectable.

[0014]
[Embodiment of the Invention] Hereafter, 1 operation gestalt of this invention is explained. This 1 operation gestalt performs by both the detection result based on the difference in a sound signal format with the volume conventional CM and on program book for detection of CM image, and the detection result of the telecine conversion performed in case the film image of 24 coma / second is changed into the video signal for the television broadcasting of 60 fields / second. Thereby, improvement in CM detectability ability in case this editing is a film image is achieved.
[0015] First, in order to make an understanding easy, drawing 1 is used and telecine conversion is explained. Film images, such as a film, consist of the image of 24 coma in 1 second. On the other hand,

a television image consists of the image of the 60 fields in 1 second. Therefore, in order to enable it to display the image based on a film image as a television image, the image number of sheets per second of a film image must be changed into 60 sheets from 24 sheets. Such conversion is called telecine conversion (or 3:2 pulldown).

[0016] From the image A1 which is one coma of a film image, the ODD field B1 and EVEN field B-2 of a television image are made, and it is displayed in order from it. From the image A2 which is the one next coma of a film image, the ODD field B3 and EVEN field B4 of a television image are made similarly, and it is displayed in order from it. And the field B3 is repeatedly used as next ODD field B5 of a television image.

[0017] From image A3 of a film image which is the one following coma further, EVEN field B6 and the ODD field B7 of a television image are made, and it is displayed in order from it. And from image A4 which is the one next coma of a film image, while the EVEN field B8 and the ODD field B9 of a television image are made, the EVEN field B8 is repeatedly used as the next EVEN field B10, and these are displayed in order.

[0018] Henceforth, an above-mentioned pattern is repeated. By telecine conversion, the piece field is repeated by five frames at 2 times of a rate in this way. Thereby, the 5 fields of a television image are made from two coma of a film image, and the film image of 24 coma / second is changed into the television image of 60 fields / second.

[0019] Drawing 2 shows an example of the configuration of the record regenerative apparatus by one gestalt of this operation. It is received by the antenna 1 and a television broadcasting electric wave is supplied to a tuner 2. In a tuner 2, the television broadcasting electric wave received with an antenna 1 is tuned in, and the received electric wave is detected and amplified. The output of a tuner 2 is supplied to the video-signal processing block 5 and the sound signal processing block 9 through a switching circuit 4.

[0020] In addition, a signal can also be supplied to the video-signal processing block 5 and the sound signal processing block 9 from the external input terminal 3 by changing a switching circuit 4. An external input is not limited to this example, for example, separates a video signal and a sound signal beforehand, and you may make it input them into A/D converters 6 and 10 mentioned later, respectively.

[0021] It is AGC (Auto Gain Control) to the signal which the video signal was taken out from the supplied signal in the video-signal processing block 5, and was taken out. Processing, processing about brightness/chrominance signal, etc. are performed. The video signal outputted from the video-signal processing block 5 is supplied to CM detection block 13 while it is changed into digital image data with A/D converter 6 and is supplied to the video-signal compressed block 7.

[0022] The image data supplied to the video-signal compressed block 7 are a predetermined method (Discrete Cosine Transform), for example, DCT. Compression coding is carried out by MPEG(Moving Picture Experts Group) 2 method which is a compression coding method using predicting coding by the motion vector. The image data by which compression coding was carried out are saved up by memory 8. Memory 8 is the buffer memory at the time of recording on a record medium.

[0023] On the other hand, in the sound signal processing block 9, a sound signal is taken out from the supplied signal and A/D converter 10 is supplied. Moreover, in the sound signal processing block 9, it is judged based on the pilot signal on which the supplied signal is overlapped whether the sound signal is which format of a monophonic recording / stereo / voice multiplex. This decision result is supplied to CM detection block 13 as sound signal information.

[0024] The sound signal outputted from the sound signal processing block 9 is changed into digital voice data with A/D converter 10. The voice data outputted from A/D converter 10 is supplied to CM detection block 13 while it is supplied to the sound signal compressed block 11.

[0025] Corresponding to a predetermined method, for example, the compression coding method of image data, the voice data supplied to the sound signal compressed block 11 is an MPEG audio method, with compression coding is carried out. The voice data by which compression coding was carried out is saved up by memory 12. Memory 12 is the buffer memory at the time of recording on a record medium.

[0026] By the way, this whole record regenerative apparatus is controlled by the microcomputer (it is hereafter called a microcomputer for short) 17. A microcomputer 17 consists of a CPU, RAM as ROM the program etc. was beforehand remembered to be, and work-piece memory, etc. moreover -- a control unit 16 -- playback / record / halt / rapid-traverse/-- various kinds of keys for already operating this record regenerative apparatus called return are prepared. Furthermore, the key for controlling CM cut mode is also prepared in a control unit 16. The signal corresponding to various keys is supplied to a microcomputer 17 from a control unit 16. Based on this signal, the directions which correspond to each part of this record regenerative apparatus are taken out with a microcomputer 17.

[0027] Writing/read-out of the above-mentioned memory 8 and 12 and the memory 21 and 26 mentioned later are made based on the control of the memory controller 18 based on the directions from a microcomputer 17. reading appearance of the memory controller 18 is carried out to each memory, and it issues directions of the address in the case of /writing, timing, etc.

[0028] Moreover, a microcomputer 17 is issuing directions to a disk controller 19, controls the servo system which is not illustrated and controls the writing/read-out in the record playback block 15 mentioned later.

[0029] Reading appearance of the image data and voice data which were saved up by memory 8 and 12, respectively is carried out to predetermined timing by the control of the memory controller 18 based on directions of a microcomputer 17, and they are supplied to the modulation block 14 for record through a bus 50. In the modulation block 14 for record, error correction coding is performed to the supplied signal. And it changes into the signal which performed the EFM (Eight to Fourteen Modulation) modulation, and was suitable for record as opposed to the signal by which error correction coding was carried out. The changed record signal is supplied to the record playback block 15.

[0030] A record signal is the record playback block 15, and is written in and recorded by the control of a disk controller 19 based on directions of a microcomputer 17 to the disk-like record medium (it is hereafter called a disk for short) 40 which consists of a magneto-optic disk. Record is made based on the positional information currently beforehand recorded on the disk 40, for example, a time code.

[0031] On the other hand, in CM detection block 13, CM part is detected based on the sound signal information, image data, and voice data which were supplied. A detection result is outputted as CM detection result information, and is supplied to the record playback block 15 through a bus 50 and the modulation block 14 for record. (And a predetermined field [in / as a time code / for example, / in the record positional information of CM part / a disk 40] (Table Of Contents), for example, TOC, It is written in the field appointed as a field.)

[0032] The data recorded on the disk 40 are reproduced by the control of a disk controller 19 based on directions of a microcomputer 17. The regenerative signal reproduced from the disk 40 is supplied to the recovery block 20 for playback from the record playback block 14. In the recovery block 20 for playback, an EFM recovery is given to a regenerative signal in the recovery processing corresponding to the modulation technique at the time of record, and this example. And the error correction sign given at the time of record is decrypted, an error correction is made, and it is outputted as image data and voice data. Image data and voice data are saved up by memory 21 and memory 26 through a bus 50, respectively.

[0033] The image data by which reading appearance was carried out from memory 21 are supplied to the video-signal expanding block 22. And compression coding (this example MPEG 2 method) performed at the time of record is solved. The image data which had compression coding solved are changed into the video signal of analog format with D/A converter 23, and are supplied to the video-signal processing block 24. In the video-signal processing block 24, predetermined processings, such as emphasis processing, are performed to the supplied video signal. A video signal is outputted from the video-signal processing block 24 as a composite signal, and it projects it as a playback image with a monitor 25.

[0034] compression coding (this example MPEG audio) to which voice data by which reading appearance was carried out from memory 26 was given with the sound signal expanding block 27 on the other hand at the time of record -- a solution -- it is changed into the sound signal of analog format with him and D/A converter 28, and the sound signal processing block 29 is supplied. And with the sound signal processing block 29, tone control, magnification, etc. are processed and a loudspeaker 30 is reproduced.

[0035] In advance of playback of the above-mentioned image from a disk 40, and a sound signal, the TOC information recorded on the TOC field of a disk 40 is reproduced. Reproduced TOC information is carried out in processing which the recovery block 20 for playback was supplied and was mentioned above, and is outputted as CM detection result information. CM detection result information is supplied to a microcomputer 17 through a bus 50, and is memorized by the memory in a microcomputer 17.

[0036] At the time of playback of an image and voice, CM cut can be performed by performing actuation predetermined by the control unit 16 based on CM detection result information. That is, the time code corresponding to CM part is obtained using CM detection result information reproduced from the TOC field of a disk 40. Based on the time code obtained from this CM detection result information, directions are taken out with a microcomputer 17 to the memory controller 18, and read-out control of memory 21 and 26 is performed so that CM part may be skipped.

[0037] Drawing 3 shows the configuration of CM detection block 13 more to a detail. The image data outputted from A/D converter 6 are supplied to the telecine detector 32 and the scene change detector 33, respectively while a part for two or more fields is saved up by memory 31. Moreover, the image data by which reading appearance was carried out from memory 31 are detected by the telecine detector 32 and the scene change detector 33, respectively.

[0038] This CM detection block 13 compares the image data directly supplied from A/D converter 6, and the image data by which reading appearance was carried out by being delayed from memory 31 by the 2 fields in the telecine detector 32. And it investigates whether the image data of the these 2 field are in agreement. Furthermore, coincidence of the these 2 field investigates whether it has generated regularly every 5 fields.

[0039] As already explained using drawing 1 , with the image to which telecine conversion was carried out, like the field B3 shown, for example in drawing 1 and B5, and the fields B8 and B10, the same field image sets the 1 field repeatedly, and is inserted, and this is repeated further every 5 fields. Then, it becomes possible by detecting this pattern to detect the image data with which telecine conversion was performed. If the image data by which telecine conversion was carried out are detected by the telecine converter 32, a telecine detection flag will be supplied from the telecine detector 32 to the CM detector 35.

[0040] The point of image data changing [scene] is detected in the scene change detector 33. For example, it is delayed from memory 31 by the 1 field, and it is compared by the ** scene change detector 33 with the image data directly supplied from A/D converter 6 that reading appearance was carried out. And when both histogram is compared and there is a difference more than predetermined, it is judged that there was a scene change between these 2 fields. A scene change detection result is supplied to the CM detector 35.

[0041] On the other hand, the voice data outputted from A/D converter 10 is supplied to the silent detector 34. The silent section in voice data is detected in the silent detector 34. For example, detection of the silent section is made by taking the envelope of voice data. A detection result is supplied to the CM detector 35. Moreover, the sound signal information outputted from the sound signal processing block 9 is supplied to the CM detector 35.

[0042] In the CM detector 35, CM section is detected based on such supplied information, i.e., a telecine detection flag, a scene change detection result, silent section information, and sound signal information. CM section is obtained as a time code of for example, CM start point and the point ending [CM], and is once memorized by the memory 36 for detection results. Reading appearance of the CM section information saved up by memory 36 is carried out to predetermined timing, it is supplied to the record playback block 15 through a bus 50 and the modulation block 14 for record, and is written in the TOC field of a disk 40. In addition, a microcomputer 17 can perform processing by the CM detector 35.

[0043] Drawing 4 and drawing 5 show CM detection actuation with the above-mentioned CM detector 35 further to a detail. In addition, CM detection based on sound signal information which shows any a monophonic recording / stereo / voice multiplex the sound signals currently performed from the former are explains the case where both impossible these editing (film image) and CMs are stereo voice below.

[0044] Drawing 4 shows processing of an example in the case of detecting the start point of CM. Drawing 4 A shows a time change of the content of a program, and having changed from this editing to CM at Point A is shown. This point A, i.e., the detection result which is a point changing [scene] and shows that there was a scene change from the scene change detector 33, is outputted. Moreover, a short time and the silent section occur at this point A. The silent section is detected by the silent detector 34 and a detection result is outputted.

[0045] Drawing 4 B shows the field of image data, an upside is the odd number (ODD) field, and the bottom is the even number (EVEN) field. One frame consists of the 2 fields which consist of the OD field and the EVEN field. In the case of a film image, a figure shows discernment of a coma, and, in the case of a television image, discernment of a frame is shown. Since this editing is a film image, telecine conversion is carried out, it is broadcast and the 2 fields repeated by being exist the 1 field like Fields H and I and Fields J and K. And this pattern is repeated at intervals of 5 fields.

[0046] The image data directly supplied from A/D converter 6 with the telecine detector 32 are compared with the image data by which reading appearance was carried out by being delayed from memory 31 by the 2 fields, and detection of the image repeated by being the 1 field is performed.

[0047] This detection is detected by whether the field which is the 1 field and is mutually in agreement about each of every piece field, ODD, and the EVEN field exists. For example, the 2 fields where the absolute value of the difference of the 2 continuous fields serves as min about the image of the piece field by which reading appearance was carried out from memory 31 are chosen as the 2 fields which are mutually in agreement. This processing is performed about ODD and the EVEN field, respectively. In addition, the absolute value of the difference of the 2 field is obtained by the thing which correspond between 2 fields and for which the absolute value of difference is taken for every pixel, and the total as the field of the value is taken.

[0048] Thus, detection of coincidence of the field sets a field coincidence flag in the next field where coincidence was detected (drawing 4 C). It detects further whether this field coincidence flag is set every 5 fields. It changes the telecine detection flag with which it is shown in drawing 4 D in the section detected that the field coincidence detection flag is stood every 5 fields into the 'H' condition.

[0049] In addition to a telecine detection flag, in the CM detector 35, CM start point is judged based on the scene change detection result in the scene change detector 33, and the silent detection result in the silent detector 34. At this time, a field coincidence flag is set in the next field of the field where the field coincidence by telecine conversion was detected. Therefore, at least, unless it sees 5 field point to a pan, it cannot know whether it is what the field where the field coincidence flag was set depends on telecine conversion. At drawing 4 , it turns out at the event of Point M that Point L is the termination of the pattern by telecine conversion. Let time amount from Point M to Point L be a detection time delay. So, in the CM detector 35, the point L which is a point which is near [at the time of only this detection time delay going back from the time of day of Point M], for example changing [scene], and is the silent section is judged to be CM start point.

[0050] Drawing 5 shows processing of an example in the case of detecting the point ending [CM]. Drawing 5 A shows a time change of the content of a program, and having changed from CM to this editing by point A' is shown. This point A', i.e., the detection result which is a point changing [scene] and shows that there was a scene change from the scene change detector 33, is outputted. Moreover, a short time and the silent section occur in this point A'. The silent section is detected by the silent detector 34 and a detection result is outputted. In addition, the semantics of drawing 5 A, the drawing 5 section B, drawing 5 C, and each drawing 5 D supports respectively drawing 4 A, drawing 4 B, above-mentioned drawing 4 C, and above-mentioned drawing 4 D.

[0051] Telecine conversion is not performed with CM image. Therefore, one frame is completed with the image for the 2 field, and the field coincidence whose two field images correspond ranging over a frame does not occur. Therefore, both the field coincidence flag and the telecine detection flag are set to 'L'. However, if it changes from CM to this editing by point A', since this editing is a film image, telecine conversion will be performed, and the field by which 1 field ************ is carried out will occur every 5 fields like Fields N and O and Fields P and Q.

[0052] With the telecine detector 32, the fields N and O by which 1 field ************ is carried out are detected, and a field coincidence flag is set like drawing 5 C. And for example, the same coincidence (fields P and Q) as a degree is detected, a field coincidence flag is set, and if the field coincidence for every 5 field was decided, the telecine detection flag which was 'L' will be set to 'H' by the inside of CM (the point S of drawing 5 D).

[0053] In addition to a telecine detection flag, in the CM detector 35, CM start point is judged based on the scene change detection result in the scene change detector 33, and the silent detection result in the silent detector 34. Also in this case, like the time of the decision of above-mentioned CM start point, an appearing [a field coincidence flag]-every 5 field pattern is seen, a telecine detection flag is set to 'H', it accumulates, and a detection time delay occurs. So, in the CM detector 35, the point R which is a point which is near [at the time of only this detection time delay going back from the time of day of Point S], for example changing [scene], and is the silent section is judged to be a point ending [CM].

[0054] The detection time delay at the time of determining CM start point or an ending point can be suitably set up according to the detection precision demanded. In the above-mentioned example, in the telecine detector 32, when field coincidence is not detected at the planned point, the telecine detection flag is promptly dropped on detection of CM start point from 'H' to 'L'. Similarly, when the field coincidence for every 5 field is detected, the telecine detection flag is promptly raised from 'L' in detection of the point ending [CM] to 'H'.

[0055]

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CLAIMS

[Claim(s)]
[Claim 1] The recording device carry out having a telecine detection means detect the part by which the telecine conversion of the supplied video signal was carried out in the recording device which can prevent from reproducing the CM part in the recorded program, a CM detection means detect a CM part based on the detection result by the above-mentioned telecine detection means, and the CM detection information record means record the CM detection information detected by the above-mentioned CM detection means on a record medium as the description.
[Claim 2] A scene change detection means to detect the point that the scene of the above-mentioned video signal changes changing [scene], in a recording apparatus according to claim 1, It has further a detection delay amendment means to perform detection delay amendment by going back a part for the detection time which the telecine detection by the above-mentioned telecine detection means took. The above-mentioned CM detection means The recording device characterized by detecting the above-mentioned point detected by the above-mentioned scene change detection means near the point which went back with the above-mentioned detection delay amendment means changing [scene] as a point that the image by which telecine conversion was carried out [above-mentioned] with the above-mentioned CM part changes.
[Claim 3] A silent partial detection means to detect the silent part of the sound signal accompanying the above-mentioned video signal in a recording device according to claim 1, It has further a detection delay amendment means to perform detection delay amendment by going back a part for the detection time which the telecine detection by the above-mentioned telecine detection means took. The above-mentioned CM detection means The recording device characterized by detecting the above-mentioned silent part detected by the above-mentioned silent partial detection means near the point which went back with the above-mentioned detection delay amendment means as a point that the image by which telecine conversion was carried out [above-mentioned] with the above-mentioned CM part changes.
[Claim 4] A scene change detection means to detect the point that the scene of the above-mentioned video signal changes changing [scene], in a recording apparatus according to claim 1, A silent partial detection means to detect the silent part of the sound signal accompanying the above-mentioned video signal,

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, according to this invention, in addition to the information which shows the monophonic recording / stereo / voice multiplex of a sound signal used from the former, the telecine conversion (3:2 pulldown) performed in case a film image is changed into a television image is detected, the detection result information on this telecine conversion is also used, and CM detection is performed. It is effective in the ability to raise the engine performance of CM detection in case this editing is a film image by this.
[0071] By using this invention especially, since both this editing and CM were stereo voice, by the conventional method of having used only sound signal information, it is effective in impossible CM detection in a Japanese film being attained.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is drawing for explaining telecine conversion (3:2 pulldown).
[Drawing 2] It is the block diagram showing an example of the configuration of the record regenerative apparatus by one gestalt of operation.
[Drawing 3] It is the block diagram showing the configuration of CM detection block in a detail more.
[Drawing 4] It is approximate line drawing showing processing of an example in the case of detecting the start point of CM.
[Drawing 5] It is approximate line drawing showing processing of an example in the case of detecting the ending point of CM.
[Drawing 6] It is approximate line drawing showing the example of CM detection result information.
[Drawing 7] It is approximate line drawing showing an example of the format at the time of recording CM detection result information on a disk.
[Description of Notations]
5 ... A video-signal processing block, 6 ... An A/D converter, 7 ... Video-signal compressed block, 8 ... Memory, 9 ... A sound signal processing block, 10 ... A/D converter, 11 ... A sound signal compressed block, 12 ... Memory, 13 ... CM detection block, 15 ... A record playback block, 17 ... A microcomputer, 18 ... Memory controller, 19 ... A disk controller, 21 ... Memory, 26 ... Memory, 31 [... A silent detector 35 / ... CM detector, 36 / ... Memory 36 and 40 for detection results / ... A disk, 41 / ... TOC field] ... Memory, 32 ... A telecine detector, 33 ... A scene change detector, 34

[Translation done.]

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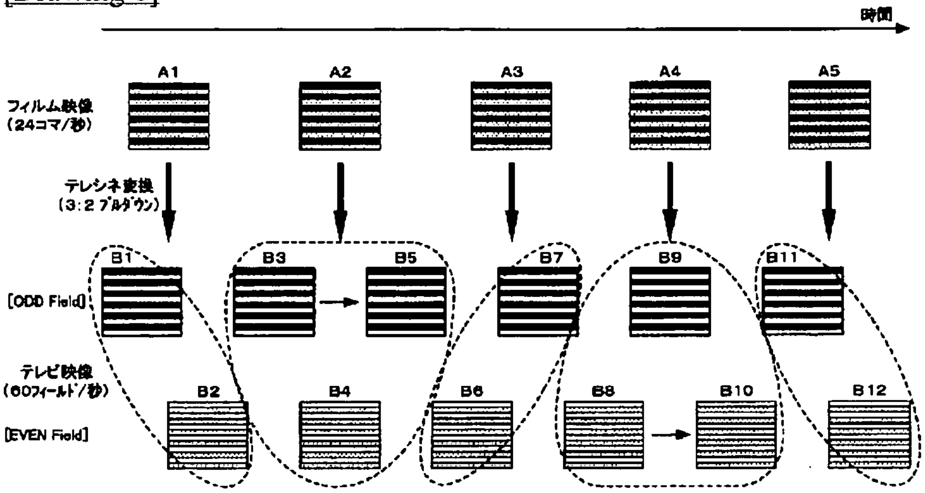
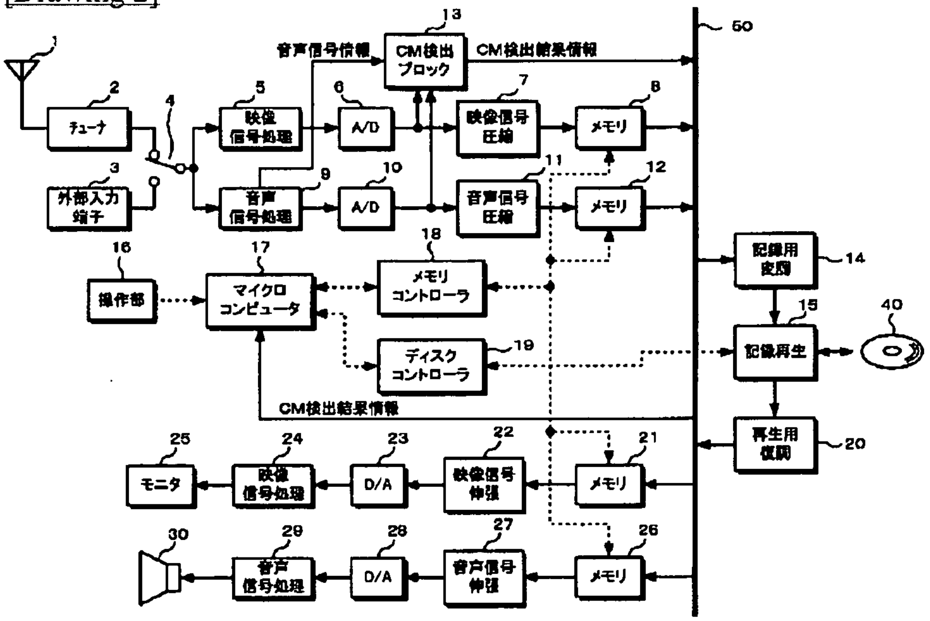
DRAWINGS

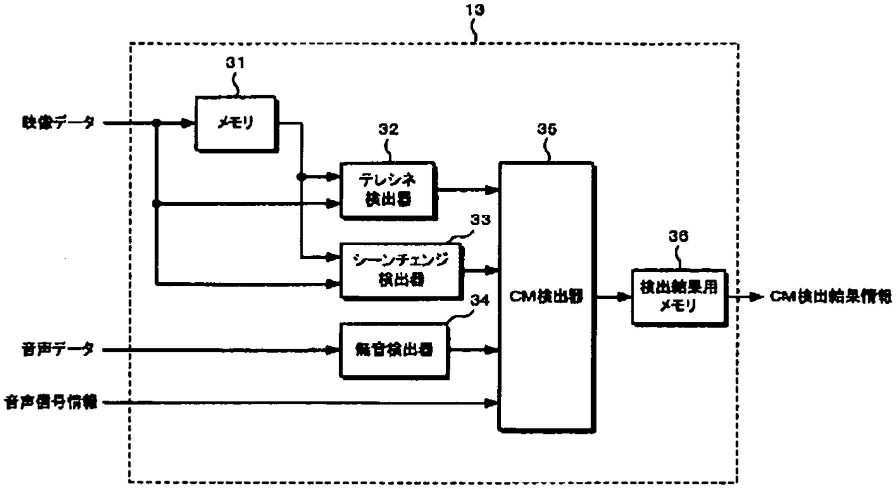
[Drawing 1]


時間
A1
A2
A3
A4
A5
フィルム映像
(24コマ/秒)
テレシネ変換
(3:2 プルダウン)
B1
B3
B5
B7
B9
B11
[ODD Field]
テレビ映像
(60フィールド/秒)
B2
B4
B6
B8
B10
B12
[EVEN Field]

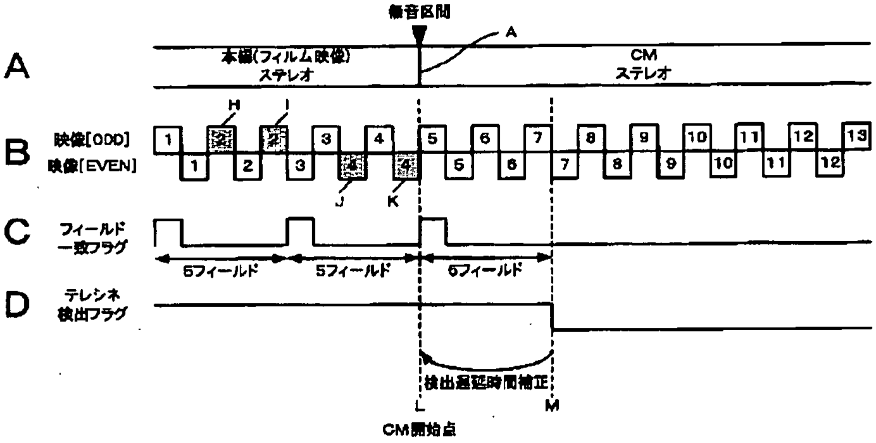
[Drawing 2]


1
2
チューナ
3
外部入力端子
4
5
映像信号処理
9
音声信号処理
6
A/D
10
A/D
音声信号情報
13
CM検出ブロック
CM検出結果情報
7
映像信号圧縮
11
音声信号圧縮
8
メモリ
12
メモリ
50
16
操作部
17
マイクロコンピュータ
18
メモリコントローラ
19
ディスクコントローラ
14
記録用変調
15
記録再生
40
CM検出結果情報
20
再生用復調
21
メモリ
22
映像信号伸張
23
D/A
24
映像信号処理
25
モニタ
26
メモリ
27
音声信号伸張
28
D/A
29
音声信号処理
30

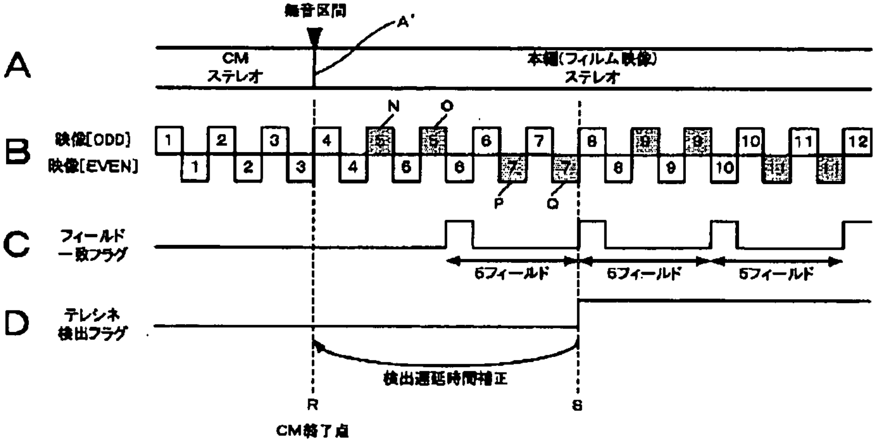
[Drawing 3]


13
31
メモリ
映像データ
32
テレシネ検出器
33
シーンチェンジ検出器
34
無音検出器
35
CM検出器
36
検出結果用メモリ
CM検出結果情報
音声データ
音声信号情報

[Drawing 4]


シーンチェンジ点
無音区間
A
A
本編(フィルム映像)
ステレオ
CM
ステレオ
B
映像[ODD]
映像[EVEN]
H
I
J
K
C
フィールド一致フラグ
5フィールド
5フィールド
5フィールド
D
テレシネ検出フラグ
検出遅延時間補正
L
M
CM開始点

[Drawing 5]


シーンチェンジ点
無音区間
A'
A
CM
ステレオ
本編(フィルム映像)
ステレオ
B
映像[ODD]
映像[EVEN]
N
O
P
Q
C
フィールド一致フラグ
5フィールド
5フィールド
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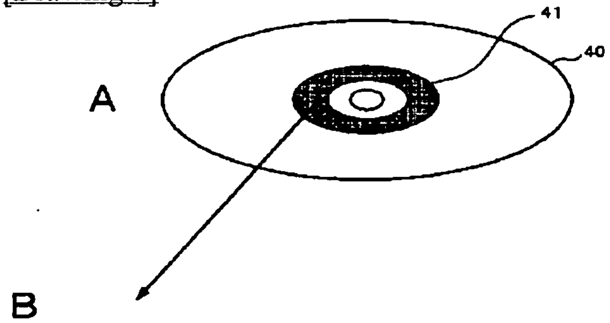
D
テレシネ検出フラグ
検出遅延時間補正
R
S
CM終了点

[Drawing 6]

CM No.	CM開始時間	CM終了時間
0	00h05m30s15f	00h07m30s15f
1	00h15m40s00f	00h18m40s00f
2	00h55m30s10f	00h56m30s10f
3	01h05m30s15f	01h07m30s15f
4	01h22m20s05f	01h23m50s05f

[Drawing 7]



	CM No.	開始時間	終了時間	CM No.	開始時間	終了時間	CM No.	開始時間	終了時間	CM No.	開始時間	
ヘッダ	0000	00053015	00073015	0001	00154000	00184000	0002	00553010	00563010	0003	01053015	…

[Translation done.]